

NTT DATA's yearly report on the impact of technology helps

organizations navigate a fast-changing digital world.

BRAINSTORMING TOMORROW

NTT DATA
Global IT Innovator

WE LIVE IN AN AGE

of miracles: self-driving cars, drone package delivery, and AI that can defeat board-game champions. There is even talk about the "Fourth Industrial Revolution."

But just like the original Industrial Revolution, this one is causing disruption aplenty. As "empowered individuals drive change"—for example, through apps like Uber that connect individual drivers and passengers, upending the taxi business in the process—or as "open networks create new social structures"—think of crowd-funding platforms such as Indiegogo—new winners and new losers are being created.

The above are two of the societal trends highlighted in *NTT DATA Technology Foresight 2016*, an annual report published by NTT DATA, one of the world's top IT service innovators. "In *NTT DATA Technology Foresight*, our goal is to identify global challenges in politics, society, and the economy, and shine a light on the technologies that will provide solutions for them," explains Tsuyoshi Kitani, executive vice president of NTT DATA's General Headquarters for Technology and Innovation.

Such challenges are hardly in short supply: from climate change and pollution to cyberattacks and swelling health care budgets, the world is awash in problems that demand smart solutions.

Robot Caregivers

In the health care space, *NTT DATA Technology Foresight* highlights precision life science, or using the biological data of different groups of people to offer them more targeted care. By collecting 1 million people's data, U.S. President Barack Obama's Precision Medicine Initiative, launched in 2015, aims to make data-driven care a reality.

NTT DATA has also been exploring ways that data can improve medical outcomes. In Spain the company has joined forces with the Andalusian Health Service and Virgen del Rocio University Hospital in Seville in an effort to make intensive care units (ICUs) smarter.

"In the ICU, multiple separate machines monitor



Sota interactive robot

patients' vital signs," Kitani explains. "We're using machine learning to collect all the vital signs and recognize the complex patterns that precede a sudden worsening in the patients' conditions. If you can predict future scenarios, you can forestall them."

One rather less sudden, more creeping challenge that developed countries face is widespread aging. In Japan, more than a quarter of the population is already over 65. It is reckoned that in 20 years' time, one-fifth of Japanese seniors will suffer from dementia.

That's why NTT DATA has been running field tests to explore ways of keeping dementia at bay. Sota, a 14-inch tall humanoid robot with speech-recognition capabilities was placed in a Tokyo care facility and programmed to ask daily routine questions—Did you take your pills? Did you sleep well?—to the seniors there, and engage them in small talk.

"Conversation staves off cognitive disorders by stimulating the episodic memory," Kitani says. "Also, the seniors' answers can be stored in a cloud database that alerts caregivers when anyone's having any problems."

Let's Get Physical/Digital

An even more serious challenge than senior health is the health of the planet. In an effort to counter climate change, the switch to nonpolluting energy is gathering pace. But environmentally benign renewables come with challenges too. Because they depend on weather conditions, wind and solar necessarily produce an

unstable supply of energy.

The best solution is to balance supply and demand by managing demand down when supply is low. NTT DATA has developed the software systems that help maintain supply/demand balance.

This sort of "creation of sustainable solutions through the convergence of the physical/digital" is another trend that *NTT DATA Technology Foresight 2016* highlights—and it's a crucial factor in making a reality of the smart cities that form a key component of smart societies. In joint research in cities in China and the UK, NTT DATA is collaborating with municipal authorities to alleviate traffic congestion by analyzing real-time traffic and other data to predict vehicle flows and optimize the workings of traffic lights accordingly. The result? Less polluted and more convenient cities.

But as data's role in our lives expands, the threat

of cyberattacks grows with it. With the advent of the Internet of Things, it's not just PCs, but cars, photocopiers, and cash machines that are at risk of hacking; hence cyber-physical security being another area of focus for NTT DATA.

"As attacks proliferate, keeping them out completely isn't realistic," says Kitani. "You need software that can detect an attack and respond fast by isolating the infected parts of the network by flipping virtual switches."

From neutralizing cyberattacks to getting the most out of data, *NTT DATA Technology Foresight* is designed to help organizations navigate a fast-changing digital world. "We can delineate a vision of the future with our clients and help them develop technologies and services to realize that vision," Kitani concludes. ●

DRIVING CHANGE

NTT DATA's automotive division is helping automakers reconceptualize their businesses.

As Silicon Valley's tech giants start developing self-driving cars and web-savvy consumers regard instant gratification as a given, automobile manufacturers are having to evolve from vehicle makers into "mobility service providers."

Which means what, exactly? First, mobility means thinking of customer needs holistically. Example: If the sensory data from the car shows that the driver is looking for a place to park, then the car should respond by locating a parking place and providing directions to it. Car companies need to develop a service mindset.

Mobility may not even involve vehicle ownership. After all, if the ability to move freely in the fastest, cheapest, most convenient way is what mobility is about,

cars may only be one part of a package.

In Vienna, Austria, for instance, NTT DATA helped make a reality of seamless travel by devising an intermodal transport solution that linked public transport and mobile ticket purchasing with EV (electric vehicle)-car-sharing and real-time traffic information.

But this sort of conceptual work only represents part of the portfolio of services offered by NTT DATA's globe-spanning automotive division. The company does consulting at every stage of the auto value chain, from supply chain management to client relation management.

These wide-ranging capabilities explain why NTT DATA was recently named a tier-one supplier to one of Germany's big three automakers. As sole partner for a shared delivery strategy based out of hubs in Bangalore and Istanbul, NTT DATA will be helping the German company to con-

solidate its business-management software applications and to "in-source" valuable knowledge as it rolls out an ambitious global growth strategy.

In this way, from supporting sales growth today to devising new mobility eco-systems for tomorrow, NTT DATA has the know-how and commitment to help redraw the world's fast-changing automotive landscape.



SHUTTERSTOCK

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—Tsuyoshi Kitani,
EVP, Technology and
Innovation General
Headquarters